Request for Additional Information

[GCS Hackberry (R06-LA-0007)] - [Request #A-2]

Instructions: Populate the "Response" column with answers/responses to each comment/question below, then upload the completed responses to Field #3 in the "Information Requests" reporting module of the GSDT. If necessary, upload attachments or references in Field #4 of the module and/or update information within other GSDT modules. *To allow reviewers to quickly locate and review changes/updates, clearly identify the location within the application where edits for each response were made (e.g., Site Characterization, Section 2.7.4, p. 53, updated paragraph 2).*

Item #	Associated Regulation(s)	Comment/Question	Response
Plugging Plan			
1	40 CFR 146.92(b)(3) - (6);	**Background:** The plug details are summarized in Tables 6-2 and 6-3, comprising 8 plugs in the final plugging and abandonment procedure. A detailed plugging schematics is provided as Figure 6-2, which matches the tables. However, the plugging schematics and procedures detailed in Appendix J do not match what is in the Plugging Plan section. Appendix J-4 is the Final P&A Procedure. The first four bridge plug placements are close to Figure 6-2 in the Plugging Plan section, although the depths they are set at are inconsistent -- the depths differ various amounts less than 100' when Figure 6-2 is compared to Appendix J-4. These values should be the same. There is an additional step in Appendix J-4 compared to Figure 6-2 and the procedures in the Plugging Plan section: "Circulate nine (9) 500-foot cement plugs from 4,500' back to surface." The schematics and procedures detailed in Appendix J reflect a process involving 14 plugs, instead of the 8 plugs detailed in the Plugging Plan section. **Comment:** Please make any necessary updates to Tables 6-2 and 6-3, Figure 6-2, the narrative in the Plugging Plan section, and Appendix J to have all sections reflect the full plugging plan procedure.	
2	40 CFR 146.92(b)	**Background:** In the Post Injection Site Care and Closure Plan section, it is written: "The Hackberry Carbon Sequestration Well No. 001 and the ground water monitoring well, HCS Monitor Well No. 001, will be plugged as discussed in Section 6."	

Item #	Associated Regulation(s)	Comment/Question	Response
		Comment: Because improperly abandoned monitoring wells may become conduits for fluid movement into, the EPA recommends that operators plug their monitoring wells in a manner similar to that used to meet the requirements for injection well plugging. We recommend explicitly describing the plugging procedure for the monitoring well and including a schematic.	
EMERGENCY RESPONSE			
3	40 CFR 146.94	**Background:** In the event of CO2 migration beyond the permitted injection and confining zones, the applicant plans to "lower injection rates or stop the injection and notify the UIC director within 24 hours." **Comment:** 40 CFR 146.94(b)(i) requires the immediate cessation of injection upon obtaining evidence that injection may pose a risk to USDWs. Please update the language to clearly reflect the required cessation of injection during such an event.	
4	40 CFR 146.94	**Background:** Due to its location within a water body, the proposed injection site is identified "as FEMA flood hazard Zone VE, which corresponds to an area within the one-percent annual change flood event with additional hazards due to storm-induced velocity wave action. Floodplain management standards apply." **Comment:** 40 CFR 146.94 indicates that the provided plan must include actions to be taken by the owner and operator in response to all emergencies. The plan should be updated to reflect the fact that the potential wellbore is located at the bottom of a water body. The updated plan should include site specific emergencies and responses (What potential risks could cause negative impacts to the water body? How will response to each emergency vary due to the underwater location of the wellbore?)	
5	40 CFR 146.94	**Background:** The full Emergency Operations Plan is included in Appendix I-3. The document provides detailed instructions to be utilized in case of emergency.	

		Comment: The applicant must provide a site/facility specific Emergency Operations Plan. Please update the EOP to provide pertinent details regarding this specific project as it appears that this plan is in reference to another facility.	
FINANCIAL RESPONSIBILITY			
6	40 CFR 146.85(a)(2)(ii), 40 CFR 146.91 (a)(7), 40 CFR 146.93(a), 40 CFR 146.93(b)	**Background:** The applicant estimates the costs of post injection site care and site closure to be $1,425,000.00. The EPA cost estimate tool, which projects a range of costs based on parameters defined within the Class VI application, establishes a range of $1,860,000 to $3,648,000. EPA Cost Estimate Tool estimates costs incurred ground-water monitoring on an annual basis, while the applicant plans on ground-water monitoring sampling which takes place every 5 years. While regulations do not specify the frequency of post injection monitoring, EPA guidance recommends post injection groundwater sampling take place at the same duration as during the injection phase (quarterly). Following injection, 40 CFR 146.91(a) requires that sampling take place on a "semi-annual" basis. A new sampling frequency may be established based on substantial evidence that the geologic sequestration project no longer poses a risk to the endangerment of USDW's [40 CFR 146.93(b)(2)]. If the applicant is not able to demonstrate USDW stability, guidance recommends that injection take place on a quarterly basis. **Comment:** The applicant should generate new estimates related to USDW monitoring that take into consideration a higher frequency of sampling. The EPA Cost Estimate Tool assumes annual sampling, but the applicant should be prepared to undergo sampling at a higher frequency.	
7	40 CFR 146.85(a)(2)(ii), 40 CFR 146.91 (a)(7), 40 CFR 146.93(a), 40 CFR 146.93(b)	**Background:** The EPA cost estimate tool assumes that the testing and monitoring activities taking place under 40 CFR 146.90 and 40 CFR 146.93 will incur operation and maintenance costs. **Comment:** EPA recommends the applicant update their cost estimate to include costs incurred by the operation and maintenance of USDW monitoring wells.	
8	40 CFR 146.90(d)	**Background:** The applicant's costs for post injection site care and site closure are estimated under the assumption that a single monitoring well meets the requirements of 40 CFR 146.90(d).	

		Comment: EPA recommends that the applicant update their cost estimates based on a multi-well monitoring network.	
9	40 CFR 146.85(a)(2)(iv), 40 CFR 146.94	**Background:** The applicant estimates costs for Emergency and Remedial response to be $1,400,000 while the EPA cost estimate tool allocates a range of $16,990,000 and $106,977,000. The applicant did not include an itemized list of costs, making this portion of the application difficult to analyze. **Comment:** Please provide an itemized third-party cost estimate for the activities associated with groundwater remediation that are described in the Emergency and Remedial Response Plan.	
10	40 CFR 146.94	**Background:** Scenario 1 of the Emergency and Remedial Response portion of the application includes potential migration of injected fluid outside of the proposed injection and confining zone. In response to this scenario, the applicant plans to amend the permit to include the zones into which the fluid has migrated. **Comment:** Although not specified by regulations, this plan may not be the appropriate response. 40 CFR 146.94(a) indicates that "the requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit." Please provide an itemized third-party cost estimate for the "Potential Response Actions" under "CO2 Migration" in the "Emergency and Remedial Response Plan" portion of the application that provides detailed actions in response to the migration of CO2 outside of the targeted injection zone.	